

*AMENDMENTS TO THE DRAWINGS*

Figure 9 is amended to correct two reference numbers.

Attachment: Replacement Sheet(s)

*REMARKS/ARGUMENTS*

In response to the Office Action mailed February 5, 2008, Applicants amend their application and request reconsideration. In this Amendment, non-elected claims 4-19 are cancelled. In addition, for simplification, claim 1 is cancelled and is replaced by new claim 20. New claims 21-23 are added so that claims 2, 3, and 20-23 are now pending.

The Examiner pointed out an error in certain reference numbers in Figure 9. The error is corrected by submitting with this Response, a replacement drawing sheet including Figure 9. Approval is respectfully requested.

In this Amendment some errors in mathematical formulas in claims 1-3 are corrected without any substantive change. An inadvertent error occurred in the final equation in claim 1 in the preparation of the Preliminary Amendment. The mathematical notation now used in the claims is clearer than the original notation and is the equation of the application as filed.

In this Amendment new claim 20 replaces examined claim 1 and includes all of the limitations of claim 1, with some clarification. In addition, claim 20 states that local pressure extremes, meaning local maxima and minima, of forces applied by the frame to the toroidal stator coil are located at particular points. Those points intersect a radial line passing through the stator core center and through the center of at least one tooth of the stator core. This description is supported in the original disclosure and paragraph [0045] of the patent application as filed. That paragraph begins near the end of page 18 and continues onto page 19. As described there, the stress applied to the stator core becomes locally extreme, meaning, in the described embodiment, a maximum, at a location on a radial straight line 6. That line 6 passes through the center line of two teeth 2 as shown in Figure 1. That straight line 6 shown in that figures corresponds to the minor axis 8 of the non-circular frame. That axis is brought into coincidence with the line 7 which passes through the center line of two of the

teeth of the toroidal stator core. The term “extreme” as employed in the claims and patent application has its usual mathematical meaning, either a maximum or minimum value. Thus, the reference at page 19 in line 3 of the patent application to the stress becoming an extreme, “maximum in this case,” refers to that standard definition of the term “extreme.”

New independent claim 21 is almost identical to claim 20 but describes the locations of local extreme pressure as being aligned with the center line of at least one slot of the toroidal stator core. This description is supported in the patent application in paragraph [0056], beginning on page 24 in line 9 of the patent application as filed.

New claims 22 and 23 are taken directly from original claims 2 and 3 but depend from new claim 21.

In the invention, as extensively explained in the patent application, pressure is applied at N discrete locations at extreme values, i.e., maxima or minima, to the toroidal stator core in order to compensate for cogging torque of the motor. By applying pressure at these particular locations around the circumference of the toroidal stator core, the pulsating components of the cogging torque are significantly reduced. As explained in the patent application, and made clear in new independent claims 20 and 21, this objective is particularly well achieved if the minor axis of the pressurizing ring, which has an elliptical shape, is aligned with a line passing through the center line of at least one of the teeth of the stator or centrally within at least one of the slots of the stator. This arrangement is perhaps described in more detail in the newly submitted independent claims than in the originally examined independent claim 1.

Claims 1-3 were rejected as obvious over Enomoto (JP 2001-218429). This rejection is respectfully traversed.

It is respectfully submitted that Enomoto has been misinterpreted. The Examiner made reference to paragraph [0012] of a translation of Enomoto, but did not furnish any translation. It is presumed the Examiner is relying upon the machine-generated English language translation from the Japanese Patent Office. That

translation, in paragraph [0012], and the other paragraphs, does not support the Examiner's position.

It is repeatedly explained in Enomoto that the Enomoto objective is to achieve the application of circumferentially uniform radial pressure to the stator core. It is essential to apply that pressure in a uniform way according to Enomoto because the stator core is manufactured of parts that interengage each other, namely the arcuate parts 3 that form, when joined together, the torus of the stator core, and the teeth parts 2 that have a tongue and slot engagement with respective arcuate parts 3. That understanding of Enomoto was already included in the patent application as filed at page 7, lines 7-12.

In paragraph [0012] of Enomoto, the shrink fitting of an exterior ring on the assembled stator core is described. The discussion in that and other paragraphs of Enomoto assumes perfect circular dimensions of the stator core and of that shrink-fit ring. According to the final sentences of paragraph [0012], the forces applied by the ring to the linked arcuate parts cause some plastic flow and filling of the joints between parts. According to the final sentence of that paragraph, this effect results in a "perfect circle" of the toroid of the stator core.

It is believed the Examiner assumed, without support in the text of the reference, that the arrows illustrated in Figures 1, 3, and 5 of Enomoto indicate points of locally applied maximum pressure as in the disclosed invention. However, Enomoto is merely illustrating, in those figures the application of a circumferentially uniform stress produced by a perfectly circular ring. Thus, the mistaken reliance upon what that part of Enomoto discloses has led to an incorrect conclusion that Enomoto provides inward radial locally maximum forces at N discrete locations. The disclosure of Enomoto, to the extent present, is to the contrary, undercutting the premise of the rejection.


To be sure, Enomoto does describe, in paragraph [0019], the possibility of reducing cogging torque by using a stator core with an inside diameter deviating from a perfect circle. However, that result is not achieved in Enomoto by applying

pressure, as in the invention, at various specific locations on the toroidal stator core. Rather, that result is achieved in Enomoto by intended or unintended lack of circularity in the form of the stator core. That lack of circularity may occur, for example, by wearing of machinery used to form the core and its parts. Thus, the invention as described in the patent application and claimed in the original claims, and in the claims now pending, is neither described nor suggested by Enomoto.

In summary, since the assumption that Enomoto describes the application of non-uniform pressure to the toroidal stator core is incorrect, the premise of the rejection is incorrect. It follows that the reasoning built upon that premise, while logical, cannot establish *prima facie* obviousness as to any pending claim, because the conclusion is based upon a fundamental misinterpretation of Enomoto.

Reconsideration and allowance of all claims now pending are earnestly solicited.

Respectfully submitted,

  
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